AMENDMENTS TO THE CLAIMS:

This listing of claims will replace prior versions and listings of claims in the application:

Claims 1 and 20 have been amended as follows: Underlines indicate insertions and ~~strikethrough~~ indicate deletions.

Listing of claims:

1. (Currently amended) A thrust load enhancement device for a rotor-bearing system, comprising:

a stator mounted on a rotation axis of the rotor-bearing system;

a rotor mounted on the rotation axis of the rotor-bearing system and separated from said stator by a magnetic air gap on the rotation axis; and

at least one permanent magnet mounted on the rotation axis of the rotor-bearing system;

wherein said at least one permanent magnet is fixed to a first one of: i) said stator and ii) said rotor, and is separated from a second one of: i) said stator and ii) said rotor by said magnetic air gap; said at least one permanent magnet, said stator, ~~and~~ said rotor and said magnetic air gap forming a magnetic circuit ~~characterized by a flux path, said air gap being adjustable, a flux in said air gap~~ generating a compensation force between said rotor and said stator that opposes an external force F_{ext}, said compensation force being either attractive or repulsive depending on said external force F_{ext}.

2. (Previously presented) The thrust load enhancement device according to claim 1, wherein the external force F_{ext} is caused by an action selected

from the group consisting of pressure and gravity in a vertical shaft configuration wherein a center of gravity is low.

3. (Previously presented) The thrust load enhancement device according to claim 1, wherein said at least one permanent magnet is fixed to said stator; said at least one permanent magnet being separated from said rotor by said magnetic air gap.

4. (Previously presented) The thrust load enhancement device according to claim 1, wherein said at least one permanent magnet is fixed to said rotor, said at least one permanent magnet being separated from said stator by said magnetic air gap.

5. (Previously presented) The thrust load enhancement device according to claim 1, wherein a first one of said at least one permanent magnet is fixed to said stator and a second one of said at least one permanent magnet is fixed to said rotor, the magnetic air gap separating said first permanent magnet from said rotor and said second permanent magnet from said rotor respectively.

6. (Original) The thrust load enhancement device according to claim 5, wherein said first one of said at least one permanent magnet and said second one of said at least one permanent magnet respectively have poles of different polarity facing each other to create an attractive compensation force between said rotor and said stator.

7. (Original) The thrust load enhancement device according to claim 5, wherein said first one of said at least one permanent magnet and said second one of said at least one permanent magnet respectively have poles of a similar polarity facing

each other to create an expulsion compensation force between said rotor and said stator.

8. (Previously presented) The thrust load enhancement device according to claim 1, further comprising a spacer to adjust said magnetic air gap.

9. (Previously presented) The thrust load enhancement device according to claim 1, further comprising a piezoelectric actuator mounted in said stator.

10. (Previously presented) The thrust load enhancement device according claim 5, wherein said rotor and said stator are made in a material selected from the group consisting of a soft magnetic material and a non-magnetic material.

11. (Previously presented) The thrust load enhancement device according to claim 1, wherein said rotor is made of carbon steel and said stator is made of mild steel.

12. (Previously presented) The thrust load enhancement device according to claim 1, wherein the external force is selected in the group consisting of a static force and a dynamic force.

13. (Previously presented) The thrust load enhancement device according to claim 1, further comprising force measurement devices to measure the compensation force.

14. (Previously presented) The thrust load enhancement device according to 13, wherein said force measurement devices are selected from the group consisting of strain gauges and piezoelectric elements.

15. (Previously presented) The thrust load enhancement device according to claim 1, wherein said load enhancement device is located at one end of a shaft of the rotor-bearing system.

16. (Previously presented) The thrust load enhancement device according to claim 1, wherein the thrust load is unidirectional from an external working load.

17. (Previously presented) The thrust load enhancement device according to claim 1, wherein the thrust load is unidirectional from a rotor weight in a vertical configuration.

18. (Previously presented) The thrust load enhancement device according to claim 1, wherein the external force is an unidirectional external static load selected in the group consisting of a working load and a shaft weight in a vertical configuration.

19. (Previously presented) The thrust load enhancement device according to claim 1, wherein the rotor-bearing system is selected from the group consisting of a magnetic bearing system, a hydrostatic bearing system, a hydrodynamic bearing system, and a rolling element bearing system.

20. (Currently amended) A method for thrust load enhancement for a rotor-bearing system comprising the steps of:

providing a stator on a rotation axis of the rotor-bearing system;

providing a rotor on the rotation axis of the rotor-bearing system separated on the rotation axis from the stator by a magnetic air gap; and

providing at least one permanent magnet on the rotation axis separated from a first one of: i) the stator and ii) the rotor, the at least one permanent magnet being separated from a second one of: i) the stator and ii) the rotor by the magnetic air gap,

whereby the at least one permanent magnet, the stator, ~~and~~ the rotor and the magnetic air gap form a magnetic circuit ~~characterized by a flux path so that a flux in the first and second magnetic air gaps~~ that generates a compensation force between the rotor and the stator, said compensation force being attractive or repulsive to oppose ~~that opposes~~ an external force $F_{ext.}$

21. (Previously presented) The method for thrust load enhancement according to claim 25, wherein said steps of providing a stator and said step of providing a rotor comprise providing a rotor and a stator made in a material selected from the group consisting of a soft magnetic material and a non-magnetic material.

22. (Original) The method for thrust load enhancement according to claim 20, wherein said step of providing a stator comprises providing a stator made of mild steel and said step of providing a rotor comprises providing a rotor made of carbon steel.

23. (Previously presented) The method for thrust load enhancement according to claim 20, wherein said step of providing at least one permanent magnet comprises mounting at least one permanent magnet on the stator, the magnetic air gap separating the at least one permanent magnet from the rotor.

24. (Previously presented) The method for thrust load enhancement according to claim 20, wherein said step of providing at least one permanent magnet

comprises mounting at least one permanent magnet on the rotor, the magnetic air gap separating the at least one permanent magnet from the stator.

25. (Previously presented) The method for thrust load enhancement according to claim 20, wherein said step of providing at least one permanent magnet comprises fixing a first permanent magnet to the stator and a second permanent magnet to the rotor, the magnetic air gap separating the first permanent magnet from the rotor and the second permanent magnet from the stator.

26. (Previously presented) The method for thrust load enhancement according to claim 25, wherein said steps of fixing a first permanent magnet to the stator and a second permanent magnet to the rotor comprise arranging respective poles of different polarity thereof facing each other to create an attractive compensation force between the rotor and the stator.

27. (Previously presented) The method for thrust load enhancement according to claim 25, wherein said steps of fixing a first permanent magnet to the stator and a second permanent magnet to the rotor comprises arranging respective poles of similar polarity facing each other to create an expulsion compensation force between the rotor and the stator.

28. (Previously presented) The method for thrust load enhancement according to claim 20, further comprising a step of providing a spacer to adjust said magnetic air gap.

29. (Previously presented) The method for thrust load enhancement according to claim 20, further comprising the step of mounting a piezoelectric actuator in the stator.

30. (Previously presented) The method for thrust load enhancement according to claim 20, wherein the external force is selected from the group consisting of a static force and a dynamic force.

31. (Previously presented) The method for thrust load enhancement according to claim 20, further comprising the step of providing force measurement devices to measure the compensation force.

32. (Previously presented) The method for thrust load enhancement according to claim 31, wherein said step of providing force measurement devices comprises selecting devices from the group consisting of strain gauges and piezoelectric elements.

33. (Previously presented) The method for thrust load enhancement according to claim 20, wherein the rotor-bearing system is selected from the group consisting of a magnetic bearing system, a hydrostatic bearing system, a hydrodynamic bearing system, and a rolling element bearing system.